

GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF AUGUST 14, 1993

1. Northwestern United States:

NEAR NORMAL TEMPERATURES PREVAIL

Temperatures returned to near normal as the cool spell ended [Ended at 7 weeks].

2. Central United States:

MORE WET WEATHER; COOL IN CENTRAL PLAINS.

Up to 250 mm of rain drenched the region (see front cover), adding more water to the already-saturated drainage basin (see page 4). During the past six weeks, rainfall totals have been 200% to 450% of normal [WET - 26 weeks]. In addition, temperatures averaged as much as 6°C below normal in Kansas and Nebraska last week [COOL - 1 week].

3. Southern United States:

STILL VERY DRY IN TEXAS WHILE SHOWERS DAMPEN FLORIDA.

Little or no precipitation fell on the southern Plains, where six-week moisture deficits approached 200 mm, but thundershowers yielded up to 60 mm of rain on parts of Florida. Farther north, 25 to 75 mm of rain dampened much of central and northern Georgia, South Carolina, and southern and western North Carolina while other areas remained rather dry [7 weeks].

4. The Caribbean, Central America, and Northern South America:

TROPICAL STORMS RAKE REGION.

Tropical Storm Bret left thousands homeless in Nicaragua after triggering mudslides in Venezuela, according to press reports. Subsequently, Tropical Storm Cindy demolished homes, cut bridges, and buried roads under mudslides while trekking across Martinique and Puerto Rico [Episodic Events].

5. Northeastern Argentina:

ABNORMAL DRYNESS CONTINUES.

Little or no rain again fell on the region as unusually dry conditions persisted. Six-week moisture deficits ranged from 60 to 80 mm [7 weeks].

6. Southern Africa:

WARM SPELL ENDS.

Temperatures returned to normal across most of the region [Ended at 6 weeks].

7. Nepal and Northern India:

DRIER CONDITIONS PREVAIL.

Although some areas in the northern part of the region received 40 to 90 mm of rain, most areas received less than 20 mm. Isolated locations still reported six-week moisture surpluses approaching 240 mm. Farther south and west, short-term moisture deficits began growing in west-central India [Ending at 9 weeks].

8. Southeastern China:

MORE WET WEATHER.

Up to 200 mm of rain drenched the region as abnormally wet conditions persisted. Scattered locations reported six-week moisture surpluses approaching 180 mm [17 weeks].

9. Eastern Mongolia and Northeastern China:

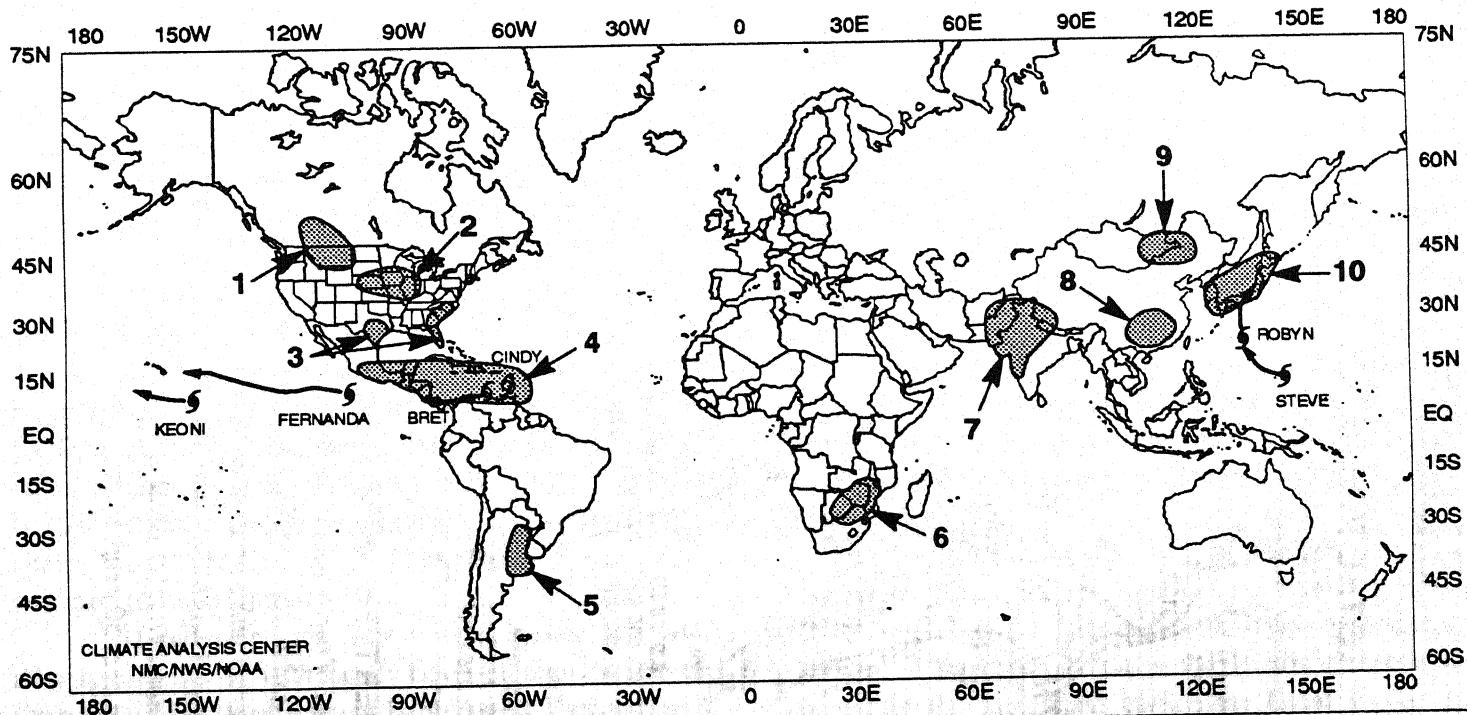
HEAVY RAINS CONTINUE.

Weekly rainfall totals reached 100 mm at some locations as 200% to 600% of normal rainfall has been measured since early June [17 weeks].

10. Japan and South Korea:

TYPHOONS TREK ACROSS REGION.

Torrential rains from Typhoons Robyn and Steve drenched the area, with as much as 500 mm falling on eastern South Korea and up to 300 mm recorded in Japan (see page 2). During the past six weeks, almost four times the normal precipitation has fallen on the region, and moisture surpluses have reached 1050 mm on parts of Kyushu [WET - 9 weeks]. As a result of persistently cloudy and wet weather, temperatures averaged as much as 6°C below normal across Japan since the beginning of the month [COOL - 2 weeks].



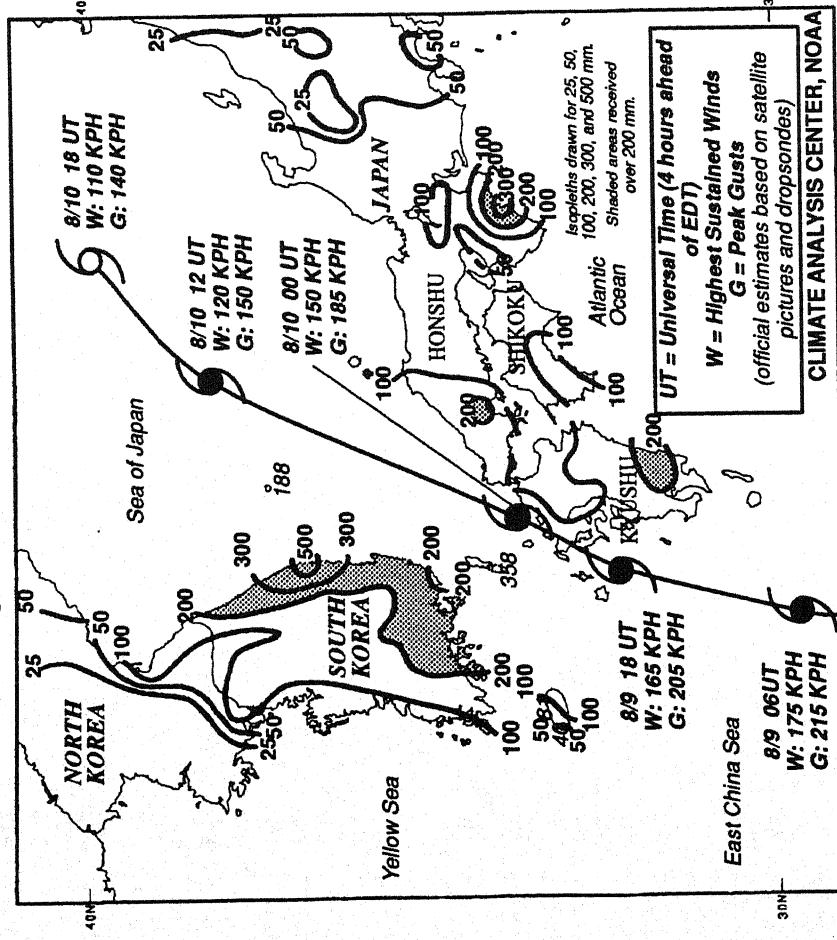
EXPLANATION

TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.

MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, long-term anomalies, and other details.

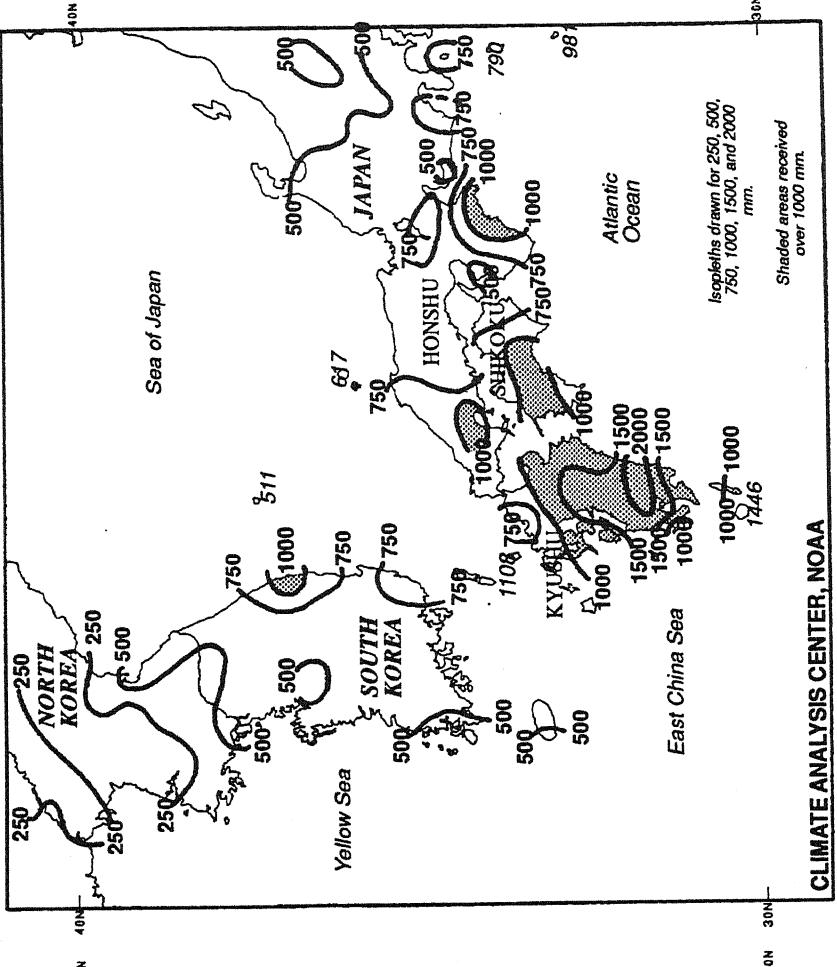
TOTAL PRECIPITATION (mm)

August 8 – 15, 1993 [8 days]



TOTAL PRECIPITATION (mm)

June 16 – August 15, 1993 [61 days]



ANOTHER TYPHOON LASHES ALREADY—SATURATED SECTIONS OF SOUTHERN JAPAN AND SOUTH KOREA. Just over a week after the second of two tropical storms moved through southern Japan, powerful Typhoon Robyn brushed the western edge of Kyushu before moving into the Sea of Japan and weakening (left). Robyn brought heavy rains and winds gusts measured at 160 kph (according to media reports) to western Japan and southern and eastern South Korea, with daily precipitation totals reaching 220 mm in the latter region. According to press reports, at least four lives were lost, rail and air travel was halted, and over 280,000 households lost electricity on the island of Kyushu, where some locations received over 2000 mm of rain in the last two months (right). Landslides, resulting from rainfall falling on waterlogged slopes, have taken dozens of lives since the inundating rains began in mid-June, including over 50 people near the town of Kagoshima on August 6.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF AUGUST 8 – 14, 1993

After a relatively dry week which allowed water levels to drop somewhat along the swollen rivers in the Midwest, strong thunderstorms again dumped heavy rain across much of the upper and middle Mississippi and middle and lower Missouri River Valleys, causing many of the rivers and streams in the region to rise again. Amounts of four to nine inches deluged much of southern Minnesota, central and eastern Iowa, northern and central Missouri, and east-central Illinois, resulting in localized flash flooding, road closures, and evacuations. Heavy rain, with unofficial reports of up to ten inches, inundated rural roads and thousands of acres of farmland in northwest Minnesota and drained into the Red River.

In contrast, after a wet week, dry weather returned to much of the South and Atlantic Coast states. Little or no rain fell on the southeastern Plains and much of the lower Mississippi Valley and New England while locally heavy rain was scattered across the Southeast and mid-Atlantic. Due to the prolonged summer drought, all of South Carolina and nearly all of North Carolina and Georgia were declared disaster areas Tuesday by the U.S. Secretary of Agriculture, according to press reports.

The week commenced with a storm system moving eastward out of the northern Rockies and into the northern Plains. Strong southerly winds ahead of the system supplied abundant moisture as severe thunderstorms erupted across the upper Mississippi Valley and upper Great Lakes. Meanwhile, showers and thunderstorms were scattered across the Rockies, southern Plateau, and along and south of a frontal boundary extending from the Carolina coast to the southern Plains. Heavy rains of over three inches flooded portions of Union County, NC while intense thunderstorms generated high wind and large hail in portions of Montana, Utah, and Arizona. By Tuesday, the southern frontal boundary dissipated while the storm system edged toward the southeast, triggering severe thunderstorms with heavy rain over eastern Iowa, northern Illinois, and northern and central Missouri. Elsewhere, thunderstorms were scattered across the central Rockies, southern Intermountain West, and the Florida peninsula.

At mid-week, the eastern storm system dissipated after spreading rain, with locally heavy amounts, across the Ohio Valley and Appalachians. Farther west, a second storm system raced across the northern Rockies and northern Plains as more thunderstorms developed in hot, humid air ahead of the system in the central Plains and middle Mississippi Valley. On Thursday, intense storms dumped up

to eight inches of rain on parts of Minnesota, Iowa, Nebraska, Illinois, and Missouri, causing sharp rises along some rivers and streams, although remaining below the record levels of the previous few weeks. At week's end, the northern portion of the frontal system moved eastward into New England while the southern section became stationary, stretching from the mid-Atlantic to the middle Mississippi Valley. Showers and thunderstorm continued in the vicinity of the system as a third storm brought more heavy rain to the northeastern Plains, upper and middle Mississippi Valley, and upper Great Lakes.

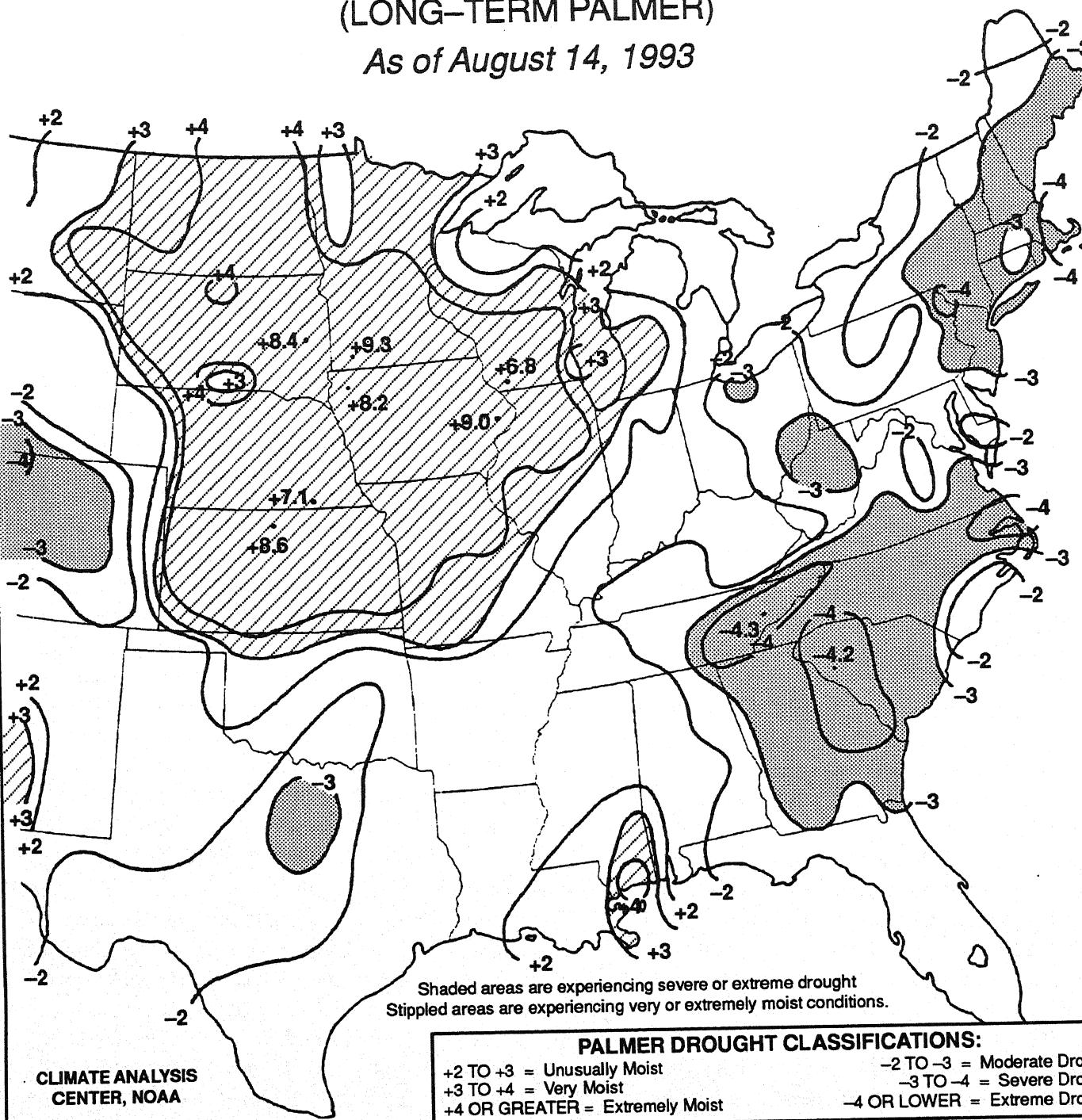
According to the River Forecast Centers, the greatest weekly rainfall totals (from two to nine inches) extended from southern Minnesota southward to southeastern Missouri and southeastward to the southern Appalachians and across portions of the Red River Valley of North Dakota and Minnesota, the upper peninsula of Michigan, central Pennsylvania, and southwestern Florida. Scattered totals of two or more inches were also recorded across the central Rockies, the southern Intermountain West, the central and northeastern Plains, the lower Mississippi Valley, south-central and southeastern Alaska, the Big Island of Hawaii, and the remainders of the Southeast and mid-Atlantic. Light to moderate amounts were reported in the Northwest and the remainders of the Rockies, the southern Intermountain West, the northern and central Plains, Alaska, Hawaii, and the eastern half of the nation. Little or no precipitation fell on California, the Great Basin, and much of the southern Plains.

Warmer than normal conditions prevailed over the desert Southwest, the southern Rockies, and much of the eastern two thirds of the United States, with weekly departures of $+3^{\circ}\text{F}$ to $+5^{\circ}\text{F}$ extending from the upper and middle Rio Grande Valley northeastward to the Great Lakes. Above normal temperatures also covered southern Alaska, with weekly departures reaching $+6^{\circ}\text{F}$ at Kodiak. Temperatures averaged near to slightly above normal in Hawaii.

In contrast, unseasonably cool weather dominated much of the western third of the nation, the mid-Atlantic, and the immediate Atlantic coast, with weekly departures of -3°F to -8°F observed across the Pacific Coast states (excluding the immediate coast), the Great Basin, the northern Rockies, and the middle Atlantic coast. In Alaska, cooler than normal conditions prevailed in northern and central areas, with weekly departures reaching -5°F at Kotzebue.

DROUGHT SEVERITY INDEX (LONG-TERM PALMER)

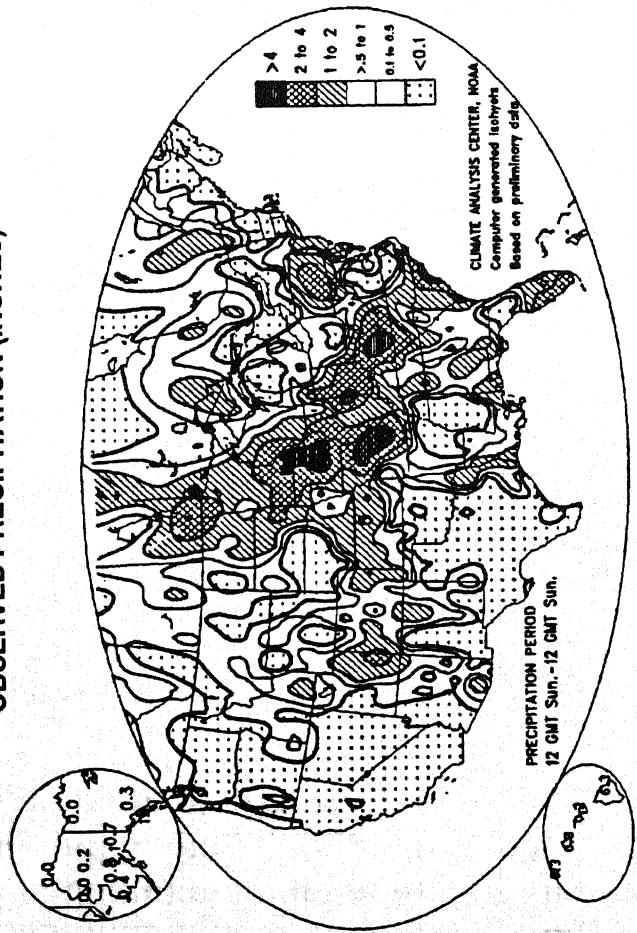
As of August 14, 1993



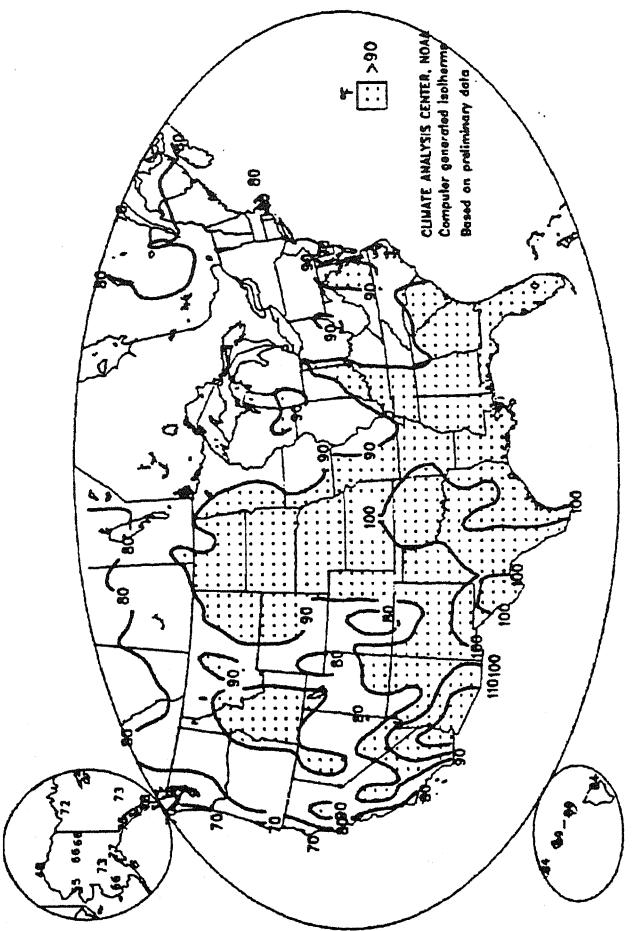
PALMER DROUGHT SEVERITY INDEX (PDI), as of August 14, 1993. This index depicts prolonged (months) abnormal dryness or wetness; responds slowly; changes little from week to week; and reflects long-term moisture runoff, recharge, and deep percolation, as well as evapotranspiration. The PDI is applicable in measuring disruptive effects of prolonged dryness or wetness on water-sensitive economies, designating disaster areas of drought or wetness, and reflecting the general long-term status of water supplies in aquifers, reservoirs, and streams. This index is not generally indicative of short-term (few weeks) status of drought or wetness as frequently affects crops and field operations (the Crop Moisture Index is more indicative of these problems). For instance, moisture deficits began to show up on the Crop Moisture Index in the Southeast weeks before the long-term (Palmer) index reflected abnormal dryness. Note that the dryness across the East and in the southern Great Plains has generated only a few PDI's under -4 while the excessively wet conditions farther north have engendered exceptionally high long-term PDI's (an DOUBLE the values typically associated with Extremely Moist conditions were observed in parts of eastern South Dakota, Minnesota, east-central and southwestern Iowa, and north-central Kansas).

UNITED STATES WEEKLY CLIMATE CONDITIONS (August 8 – 14, 1993)

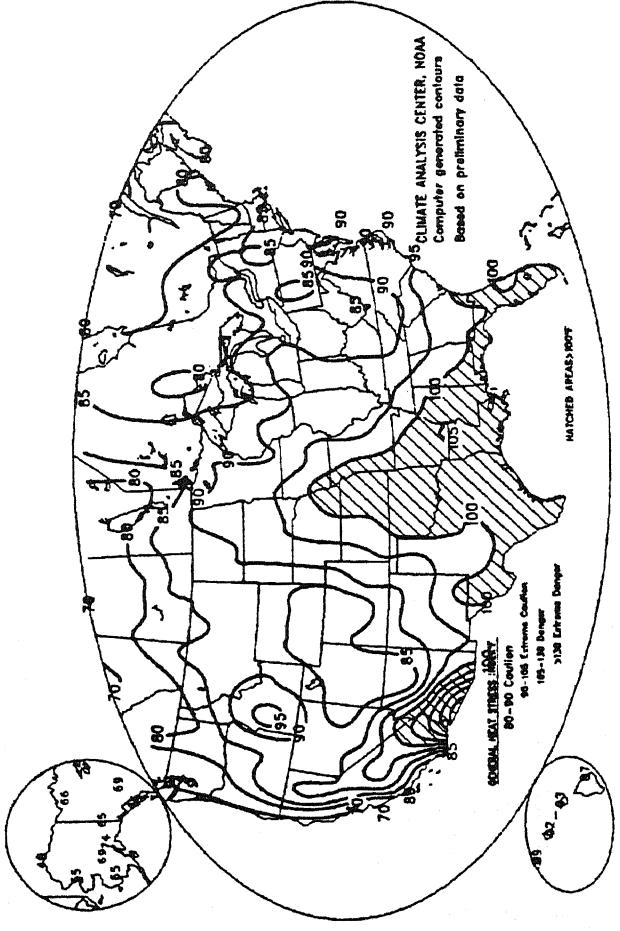
OBSERVED PRECIPITATION (INCHES)



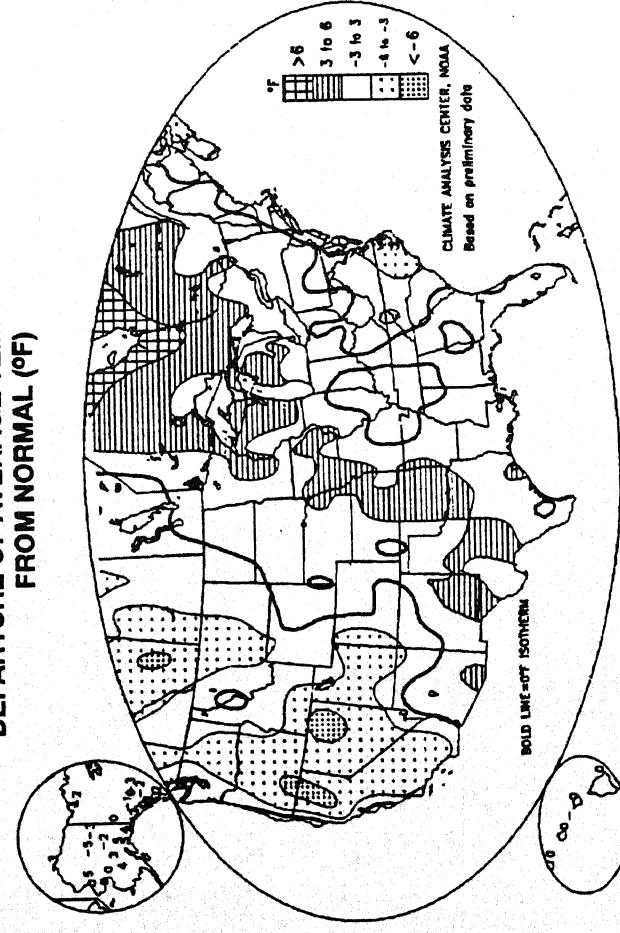
EXTREME MAXIMUM TEMPERATURE (°F)



EXTREME APPARENT TEMPERATURE (°F)

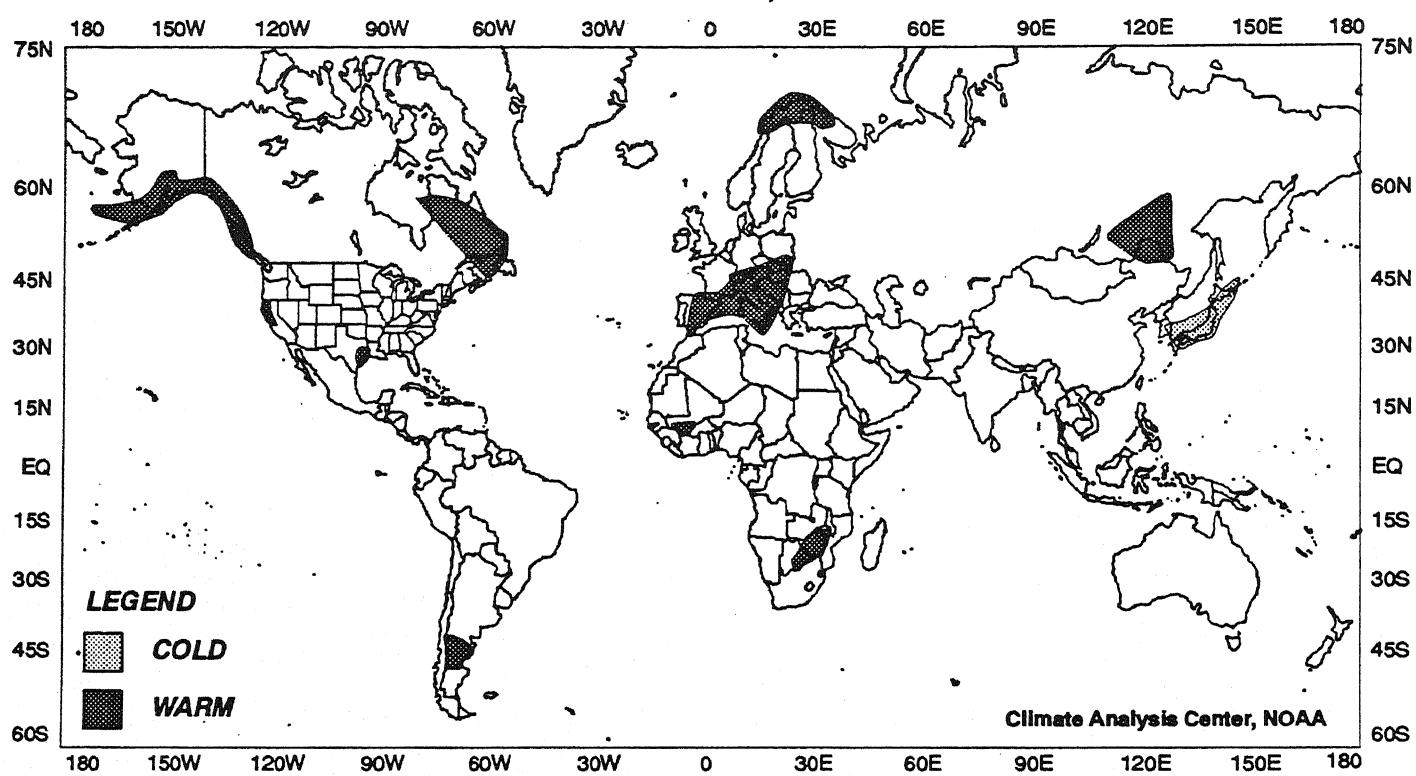


DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)



TWO-WEEK GLOBAL TEMPERATURE ANOMALIES

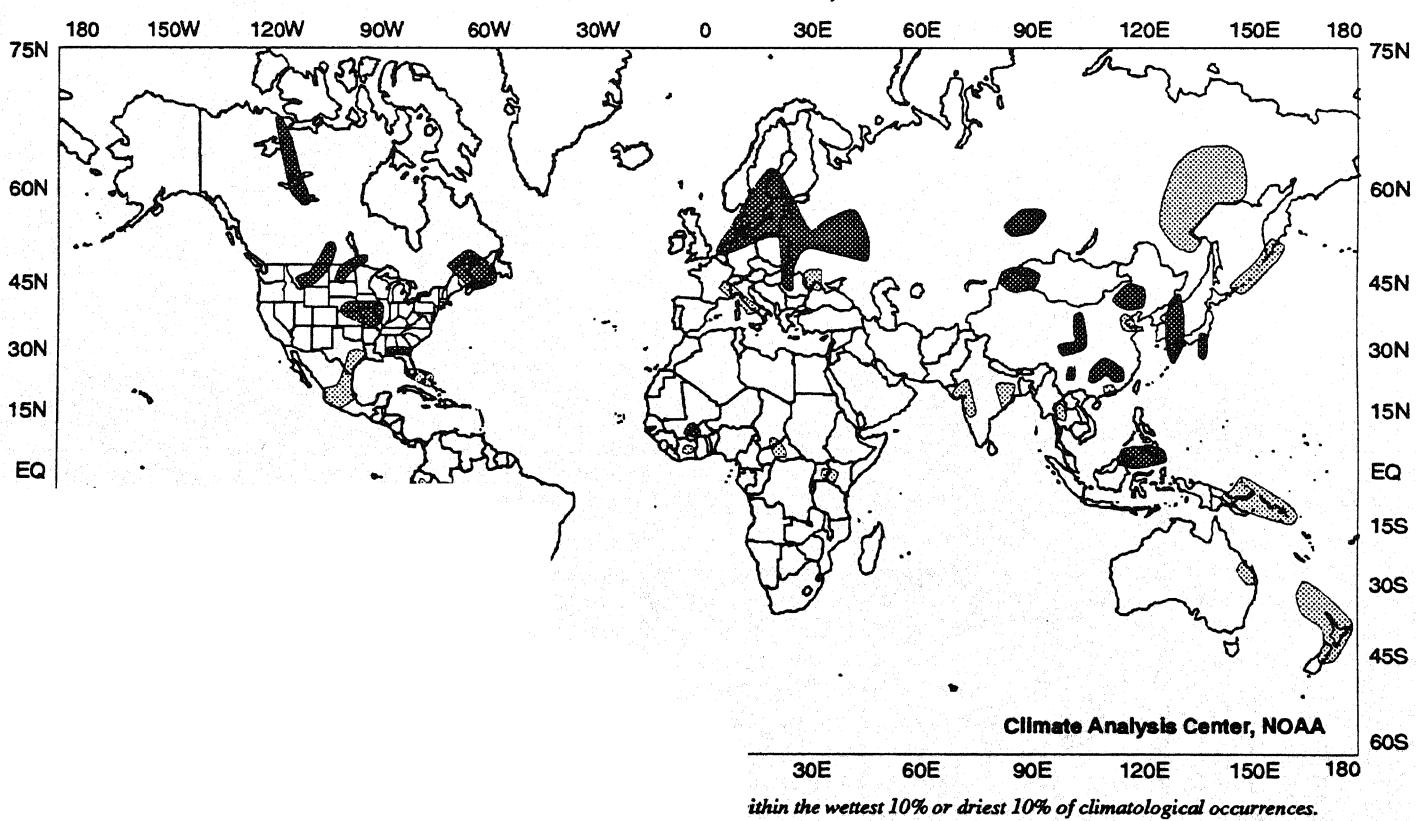
AUGUST 1-14, 1993



Shading depicts regions where temperature anomalies were estimated to be within the warmest 10% or coldest 10% of climatological occurrences.

FOUR-WEEK GLOBAL PRECIPITATION ANOMALIES

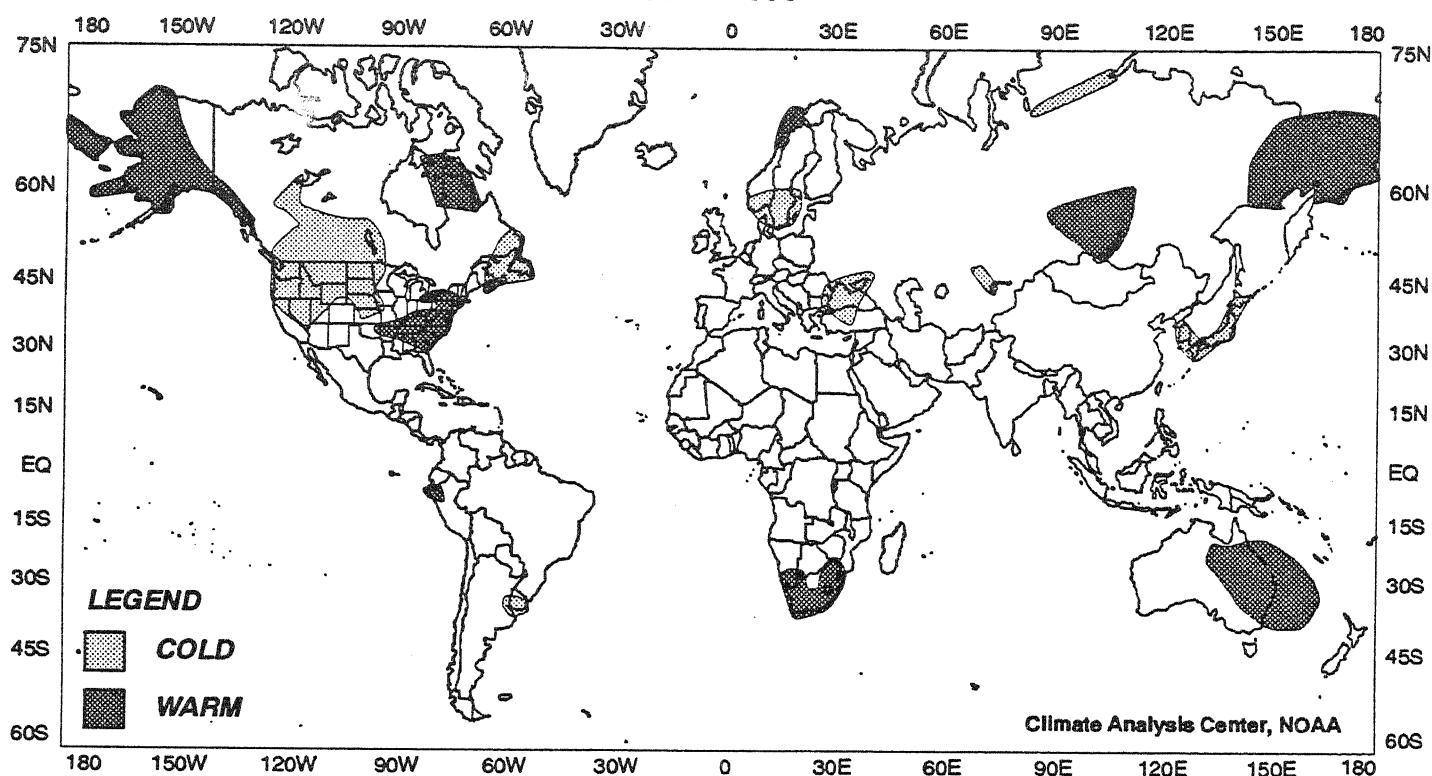
JULY 18 - AUGUST 14, 1993



Shading depicts regions where precipitation anomalies were estimated to be within the wettest 10% or driest 10% of climatological occurrences.

MONTHLY GLOBAL TEMPERATURE ANOMALIES

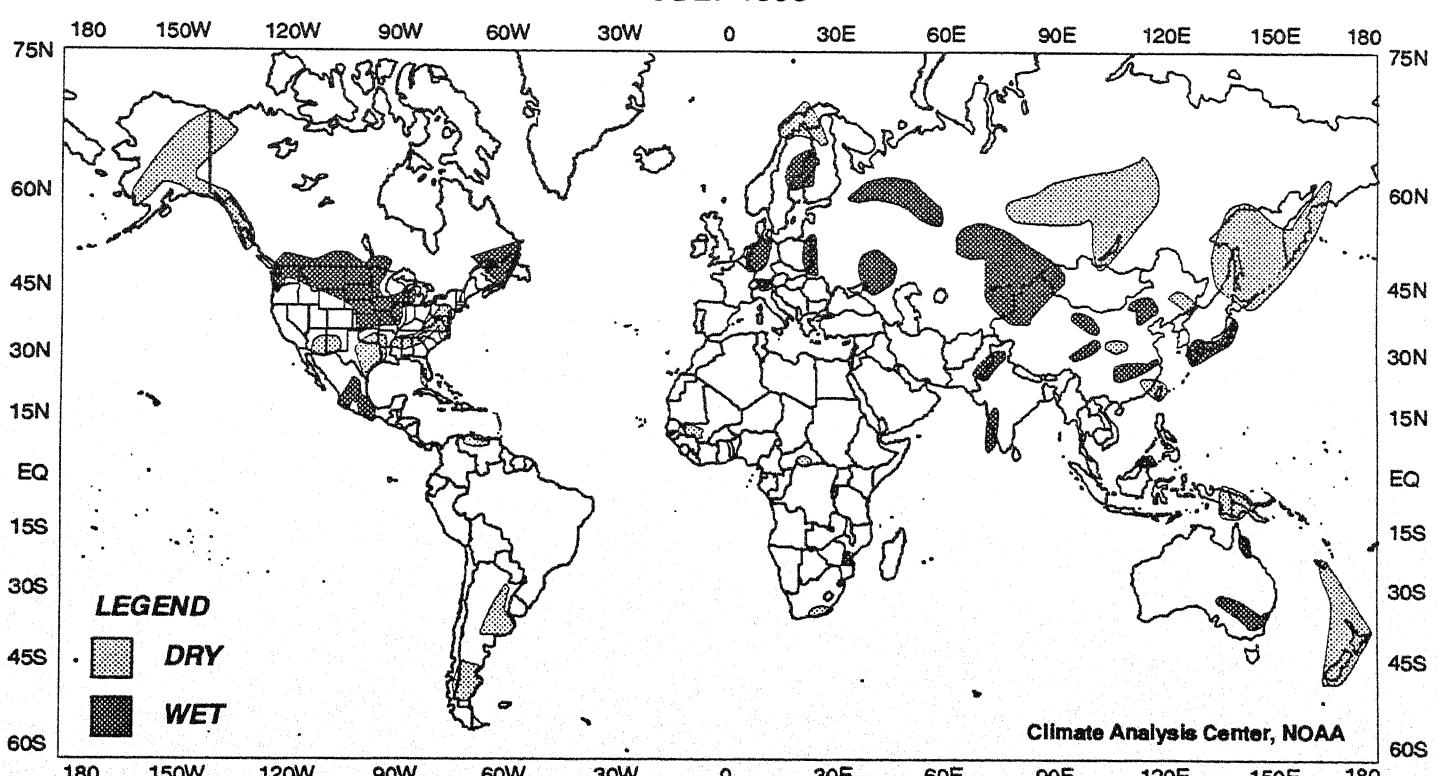
JULY 1993



Shading depicts regions where temperature anomalies were estimated to be within the warmest 10% or coldest 10% of climatological occurrences.

MONTHLY GLOBAL PRECIPITATION ANOMALIES

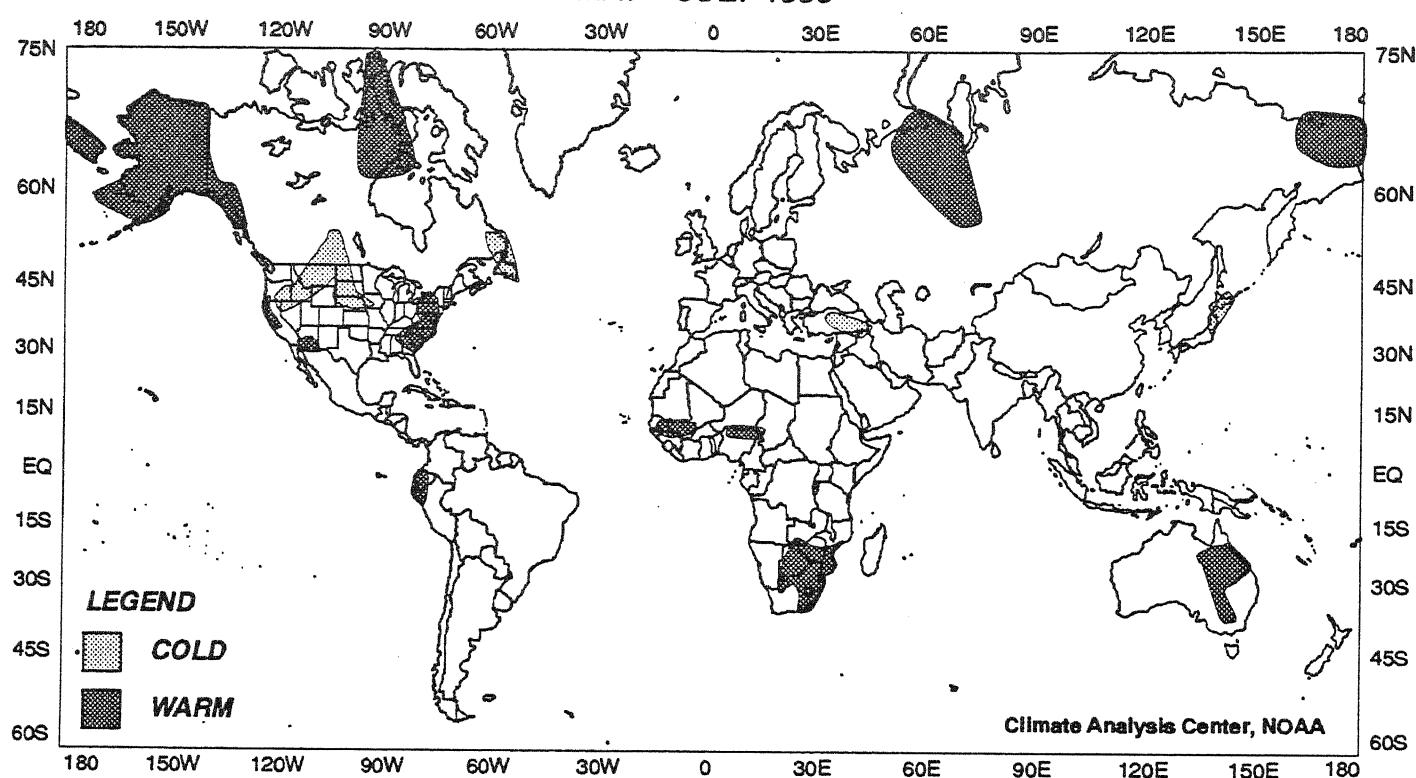
JULY 1993



Shading depicts regions where precipitation anomalies were estimated to be within the wettest 10% or driest 10% of climatological occurrences.

THREE-MONTH GLOBAL TEMPERATURE ANOMALIES

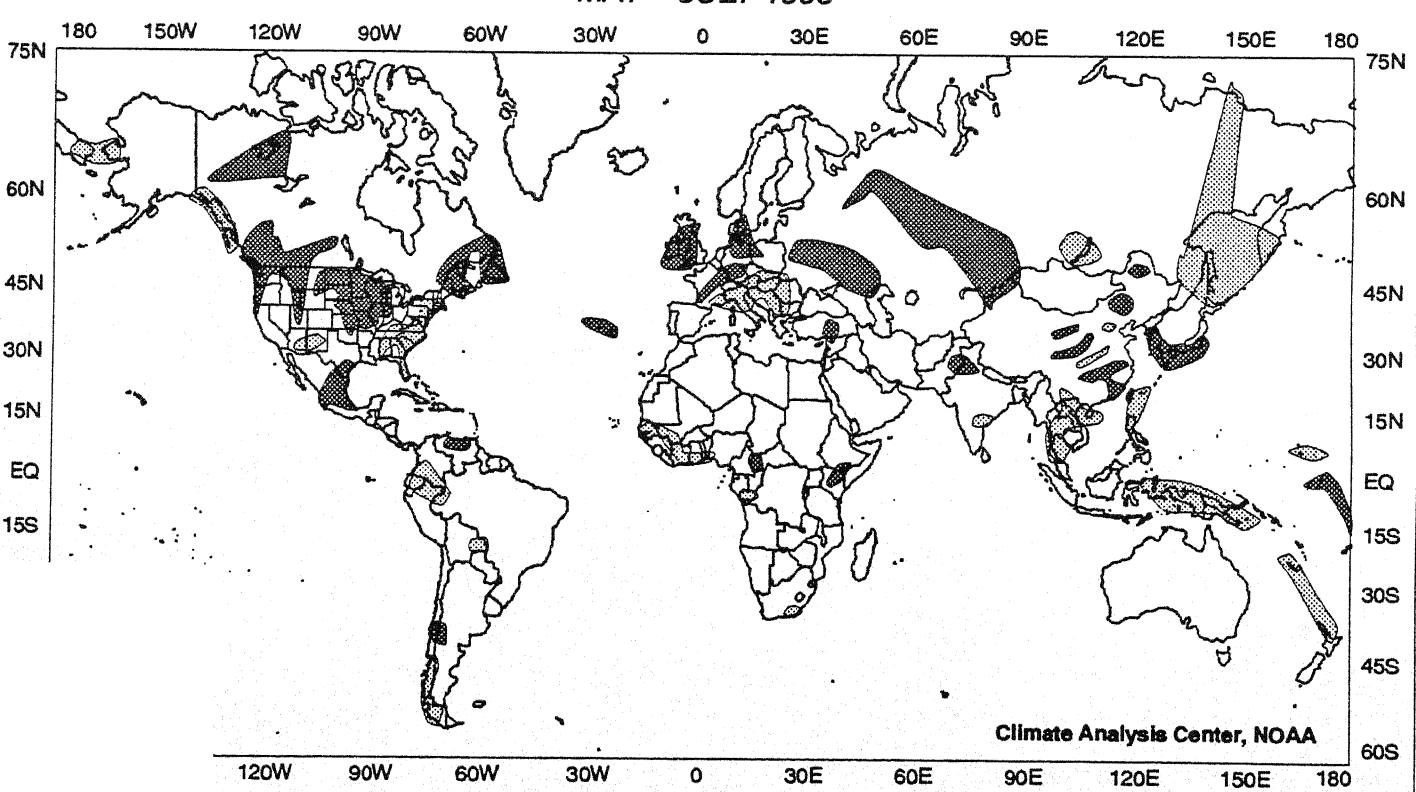
MAY – JULY 1993



Shading depicts regions where temperature anomalies were estimated to be within the warmest 10% or coldest 10% of climatological occurrences.

THREE-MONTH GLOBAL PRECIPITATION ANOMALIES

MAY – JULY 1993



regions where precipitation anomalies were estimated to be within the wettest 10% or driest 10% of climatological occurrences.